

TABLE 2

<u>Dissolution times of NM A-type crystal/ACE-K powder mixtures</u>		
<u>NM A-type crystals alone</u>		
Amount of NM A-type crystals (g)	Dissolution time (min)	
1.00	42	
0.90	40	
0.80	38	
0.50	35	
0.10	16	
0.03	10	
<u>Mixture (1 g)</u>		
Content of ACE-K powder (% by weight)	Amount of NM A-type crystals (g)	Dissolution time (min)
10	0.90	25
20	0.80	20
50	0.50	13
90	0.10	10
97	0.03	6

As may be seen from the above Table and from the comparison of the Table 2 with the Table 1, the dissolution rate of NM is improved more significantly by using C-type crystals rather than A-type crystals.

Experimental Example 3

(Separate Addition of NM C-type Crystals Alone and ACE-K Powder)

The same NM crystals as those in Experimental Example 1 were used as NM, and the same ACE-K powder (average particle size (diameter) of about 20 μ m) as that in Experimental Example 1 was used as ACE-K, and the dissolution times thereof were determined in the same manner as in Experimental Example 1.

That is, 0.5 g each of both of them was weighed (1.0 g in total) and introduced simultaneously without being previously mixed, into the elution tester (separate addition). The results are shown in Table 3 below. For reference, the dissolution time of 0.5 g NM C-type crystals alone (Experimental Example 1) is also shown together in the table.

TABLE 3

Dissolution time of NM and ACE-K when separately added (min)	
NM C-type crystals alone (0.5 g)	Separate addition (1 g in total) (0.5 g NM C-type crystals + 0.5 g ACE-K powder)
55 minutes	55 minutes

From this table, the improvement of NM dissolution rate (solubility) by using ACE-K is not observed when NM and ACE-K are separately added without being previously mixed. This may be attributable to the very high dissolution rate of ACE-K, as described above.

According to the present invention, Acesulfame K (ACE-K) powder is mixed with Neotame (NM) whereby the poor dissolution characteristics (solubility) of NM can be significantly improved, and simultaneously a sweetener excellent in quality of sweetness can be easily obtained. Accordingly, the present invention is advantageous particularly for use in drinks where a sweetener is dissolved in industrial production, but the present invention is not limited thereto and can be used as an improved sweetener composition in any uses.

Having now fully described this invention, it will be apparent to one of ordinary skill in the art that many changes and modifications can be made thereto without departing from the spirit or scope of the invention as set forth herein.

This application is based on International Application No. PCT/JP99/02197, filed Apr. 26, 1999, and Japanese Patent Application No. 10-125990, filed May 8, 1998, the entire contents of each of which being hereby incorporated by reference, the same as if set forth at length.

We claim:

1. A sweetener composition, comprising a mixture of:

(a) N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester; and

(b) Acesulfame K,

wherein said Acesulfame K is present in said mixture in an amount of 50 to 97% by weight based on the total weight of said N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester and said Acesulfame K.

2. The sweetener composition of claim 1, wherein said N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester comprises a C-type crystal.

3. The sweetener composition of claim 1, wherein said N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester is a dry powder.

4. The sweetener composition of claim 1, wherein said Acesulfame K is a dry powder.

5. The sweetener composition of claim 1, which is in the form of a dry powder.

6. The sweetener composition of claim 1, wherein said N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester comprises a C-type crystal which exhibits CuKa (2 θ) X-ray diffraction peaks of at least 7.1°, 19.8°, 17.3°, and 17.7°.

7. The sweetener composition of claim 1, wherein said N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester comprises a C-type crystal having a water content of less than 3% by weight.

8. The sweetener composition of claim 1, wherein said N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester comprises an A-type crystal.

9. The sweetener composition of claim 1, wherein said N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester comprises an A-type crystal having a water content in the range of 3 to 6% by weight.

10. The sweetener composition of claim 1, wherein said N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester comprises an A-type crystal which exhibits CuKa (2 θ) X-ray diffraction peaks of at least 6.0°, 24.8°, 8.2°, and 16.5°.

11. The sweetener composition of claim 1, further comprising at least one ingredient selected from the group consisting of diluents, thinners, excipients, sugar alcohols, oligosaccharides, food fibers, dietary fibers, synthetic high-potency sweeteners, Aspartame, Alitame, saccharin, low-potency sweeteners, sucrose, glucose and mixtures thereof.

12. A drink composition, comprising:

(A) a mixture, comprising:

(a) N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester; and

(b) Acesulfame K; and

(B) a potable liquid,

wherein said Acesulfame K is present in said mixture in an amount of 50 to 97% by weight based on the total weight of said N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester and said Acesulfame K.

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13. A method for preparing a sweetener composition, comprising:

(1) drying A-type crystals of N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester, to obtain C-type crystals of N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester; and

(2) mixing said C-type crystals of N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester with Acesulfame K, to obtain a mixture, wherein said Acesulfame K is present in said mixture in an amount of 50 to 97% by weight based on the total weight of said N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester and said Acesulfame K.

14. A method for producing a sweetener, comprising:

(1) mixing N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester with Acesulfame K, to obtain a mixture,

wherein said Acesulfame K is present in said mixture in an amount of 50 to 97% by weight based on the total weight of said N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester and said Acesulfame K.

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15. The method of claim 14, wherein said N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester comprises a C-type crystal having a water content of less than 3% by weight.

16. A method for improving the dissolution rate of N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester, comprising:

(1) mixing said N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester with Acesulfame K, prior to dissolving said N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester, to obtain a mixture,

wherein said Acesulfame K is present in said mixture in an amount of 50 to 97% by weight based on the total weight of said N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester and said Acesulfame K.

17. The method of claim 16, wherein said N-[N-(3,3-dimethylbutyl)-L- α -aspartyl]-L-phenylalanine 1-methyl ester comprises a C-type crystal having a water content of less than 3% by weight.

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